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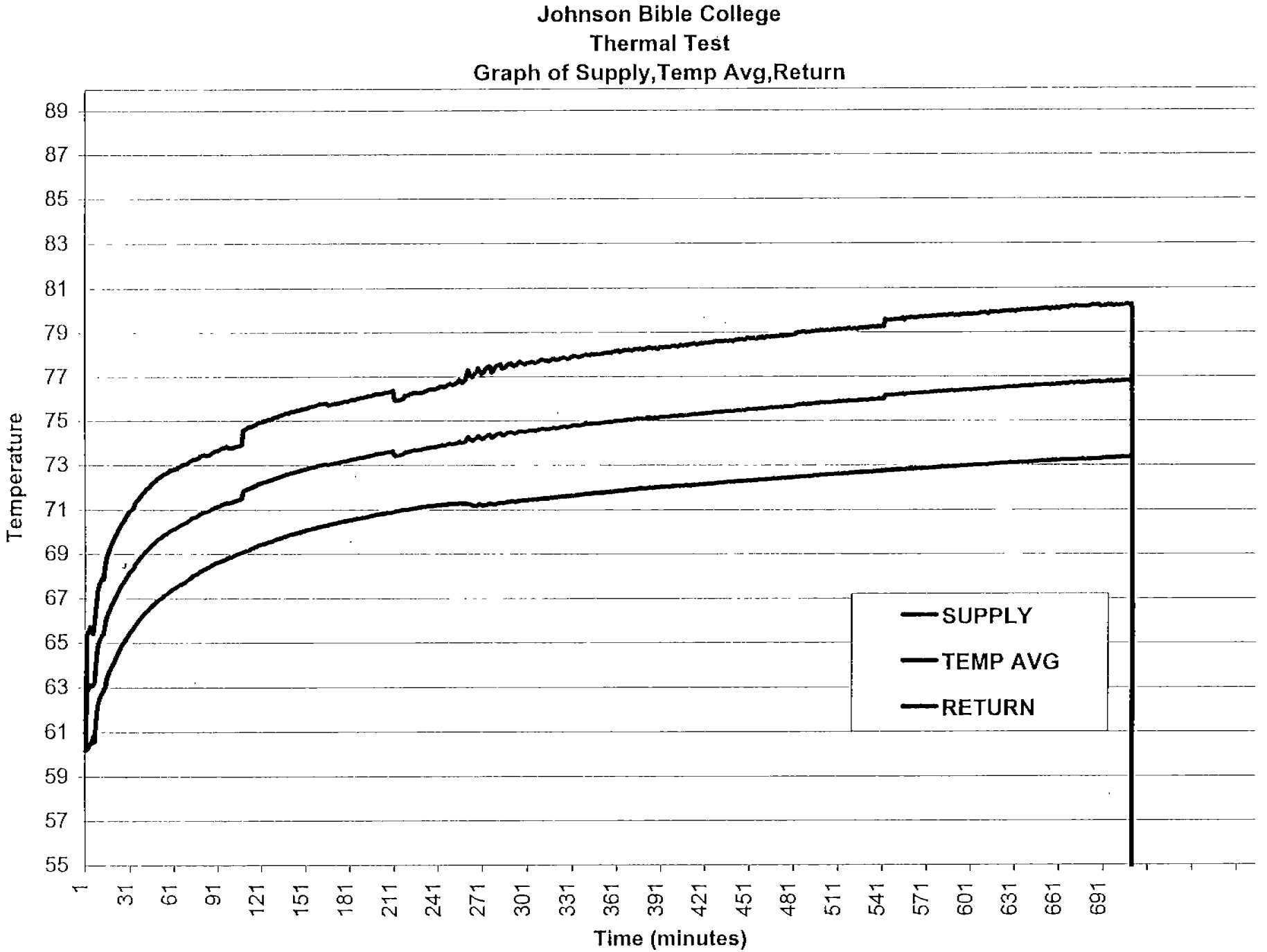
Thermal Conductivity Test Results
Johnson Bible College
Knoxville, Tennessee

Earth Energy Engineering performed a thermal conductivity test at the Johnson Bible College in Knoxville, Tennessee on April 27, 1999. Testing was done by Bill Nagle with a Ewbank portable test unit.

The test borehole was 325 feet in depth and 5" in diameter. A 1" inch loop was installed and the borehole was backfilled with #8 stone. Static water level was not reported.

The average thermal conductivity (k) for the borehole was **1.35 btu/degree F-hr-foot**. This is an average conductivity per foot for the borehole. This value represents the rate at which the borehole and rock will transfer heat. It is an important variable in determining the amount of ground heat exchanger required for a given system.

All test equipment, methods, procedures, calculations, and interpretation is done in accordance with the recommendations and guidelines of the International Ground Source Heat Pump Association.


Johnson Bible College
Thermal Test
Graph of Supply,Temp Avg,Return
Temperature
89
87
85
83
81
79
77
75
73
71
69
67
65
63
61
59
57
55
1
31
61
91
121
151
181
211
241
271
301
331
361
391
421
451
481
511
541
571
601
631
661
691
Time (minutes)
SUPPLY
TEMP AVG
RETURN

Johnson Bible College
Thermal Test
Graph of Log Time of Temp Avg